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**Re: How does electric current flow?**

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Area of science: Engineering

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**Message:**

Electricity flows a lot like water in some ways.

For instance, water flows because it has a lot of pressure behind it, or because it falls down a slope. In the case of electricity, electrons flow because there is a potential difference between the place where the electrons are and where they are trying to go to. The measure of how much force is behind the electricity is called the voltage. The higher the voltage, the more the electrons want to flow.

If you have a skinny pipe or hose, only so much water can come out at a time. Electrical current, measured in amperes, is the quantity of electricity that is flowing. Imagine the water flowing out of Niagara falls versus the water flowing out of your faucet. The height of the falls is the "voltage", the amount of water (thousands of gallons per minute) is the "current". Your faucet has 100 psi of pressure, but the faucet will only let a few gallons per minute through. That is because the pipe is a resistance to the flow. Electricity behaves the same way. A resistor, like a light bulb, will only allow so much current to flow. If you have a big fat cable, like the one between the battery and the motor in your car, hundreds of amps of electricity can flow.

Metals conduct electricity easily. Other things resist the flow, like plastics and rubber.

To get electricity to flow, you need a complete circuit, or loop, between the source with the higher potential and the place where the electricity is going. One path going from the battery or wall plug to the object that is using the electricity, and a return path. This is where the analogy to flowing water breaks down. You only need one path for water to flow. For electricity, you need two paths.

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